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Eino Kaila's Scientific Philosophy

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1. Philosophically, twentieth century was in many ways the century of "scientific philosophy". At any rate we can say, following Georg Henrik von Wright, that among all the philosophical trends of the past century, the so-called "analytic philosophy" was "the most typical of the spiritual climate of the time" (von Wright 1993: 25), a status which was due to "its alliance with the two forces which more than any other have stamped contemporary civilization: science and technology" (*ibid*.) As von Wright points out, however, the alliance is not characteristic of all of analytic philosophy. He quotes from a paper by Friedrich Waismann, where the author draws a sharp distinction between philosophy and science as two "fundamentally different types of attitudes of the human mind" (Waismann 1939: 265). The scientific spirit seeks knowledge or propositions which are true, an attitude which, when cultivated on a higher level, manifests itself as the formation of scientific theories. The philosophical spirit, on the other hand, does not seek true propositions but an increase in inner clarity; insofar as there has been progress in the history of philosophy, this lies not so much in results as in the formulation of questions (*ibid*.)

The view expressed here by Waismann was accepted by many philosophers who qualify as "analytic" by some suitable criterion. Indeed, if there is such a thing as the standard picture of analytic philosophy, it is probably not very far from what Waismann describes under the rubric of "philosophical spirit". But then it is no longer clear what the connection is between science and analytic philosophy and what the alliance with science and technology is

supposed to consist in; at any rate, no such connection is included in the "definition" of philosophy, as Waismann would have it; the connection is, so to speak, external and not internal.

On the other hand, many of those philosophers whom conventional wisdom classifies as "analytic" have represented the scientific, rather than the philosophical spirit; this applies even to some of the classics of analytic philosophy.[1] Here the interpretative problem is a mirror-image of the above: what makes a scientific philosopher into a representative of the specifically analytical trend in philosophy?

The case of Eino Kaila and his philosophical work provides a good illustration of this "tension" within analytic philosophy. From the early 1920s on, Kaila maintained contacts with many of those philosophers who would later organize themselves into the Vienna Circle; in the Circle's Manifesto, Kaila is mentioned among the associates of the Circle; and what are probably his two most important philosophical works, Kaila (1936) and (1941), are subtitled "contributions to logical empiricism". These contacts and connections with logical empiricism are the closest that Kaila came to being an analytic philosopher.

Yet, on the other hand, the term "analytic" does not apply very well to Kaila's work. His vision of philosophy was *synthetic* rather than (purely) analytic. For instance, one of his early monographs is entitled *Beiträge zu einer synthetischen Philosophie*, "Contributions to a synthetic philosophy". In the Finnish version of his paper on Kaila's monism, von Wright says of *Beiträge* that it is "one of the boldest and most original attempts ever in Finnish

[1] Von Wright (1993: 28–9) mentions the Russell of the 1920s as an example of such a philosopher.

philosophy to develop a 'complete' philosophy".[2] This search for a complete philosophy is, indeed, characteristic of Kaila; as von Wright (1992b: 76) observes, Kaila aimed at synthesis, monism and unification. What Kaila had in mind was a monistic philosophy of nature in the sense of *Naturphilosophie*. Such an enterprise was quite a few steps away from logical empiricism, just as it is from anything that we are accustomed to acknowledge as analytic philosophy.

In the present paper I will not investigate the development of Kaila's monistic *Naturphilosophie* – von Wright (1992b) provides an overview of this.[3] My aim is the much more modest one of finding a plausible answer to the question, "In what sense was Kaila a scientific philosopher?" There can be no doubt that Kaila's philosophy *was* scientific in the most serious and non-superficial sense of that term; his involvement in *Naturphilosophie* in no way compromises this. On the other hand, the import that "scientific philosophy" had for him was not tied to the specifics of the monistic philosophy of nature. Thus, focusing what in Kaila's view makes for a scientific philosophy may help us to locate his place in the twentieth-century philosophical landscape.

I don't know whether this kind of mapping by which one seeks to establish a philosopher's relations to the more conspicuous of the intellectual trends of his or her time is a worthwhile pursuit. Certainly, not *very* much is brought to light in this way, as long as our observations remain on a relatively general level. Every serious attempt at identifying the real character of a philosopher's work should do justice to particularities; and personally, I'm not convinced that the so-called meta-philosophy – or better, "philosophy of philosophy", as in

[2] Von Wright (1992a: 83); this sentence is not included in the English version of the essay (1992b).

[3] But I will mention it briefly in section 7.

Williamson (2007) – is the most fruitful of philosophers' undertakings. Nevertheless, an occasional foray into this terrain may not be time misspent.

2. What, then, are the features that make Kaila's philosophy scientific and what relationship do they bear to other, similar-sounding ideas? Let me begin answering this question by considering one well-known call for scientific philosophy, issued by Bertrand Russell just before the outbreak of the First World War:

> By concentrating attention upon the investigation of logical forms, it becomes possible at last for philosophy to deal with its problems piecemeal, and to obtain, as the sciences do, such partial and probably not wholly correct results as subsequent investigation can utilise even while it supplements and improves them. Most philosophies hitherto have been constructed all in one block, in such a way that, if they were not wholly correct, they were wholly incorrect, and could not be used as a basis for further investigations. It is chiefly owing to this fact that philosophy, unlike science, has hitherto been unprogressive, because each original philosopher has had to begin the work again from the beginning, without being able to accept anything definite from the work of his predecessors. A scientific philosophy such as I wish to recommend will be piecemeal and tentative like other sciences; above all, it will be able to invent hypotheses which, even if they are not wholly true, will yet remain fruitful after the necessary corrections have been made. This possibility of successive approximations to the truth is, more than anything else, the source of the triumphs of science, and to transfer this possibility to philosophy to ensure a progress in method whose importance it would be impossible to exaggerate. (Russell 1914a: 110)

Like many other philosophical reformists, Russell was convinced that whether a philosophy is scientific or unscientific is determined by *method*. According to the Russell of 1914, the correct method was "logical constructions", of which the paradigmatic example is the construction of numbers as equivalence classes of equinumerous classes and the point of which – at least as Russell saw it – was the avoidance of unnecessary metaphysical postulates. But its application was in no way limited to the philosophy of mathematics. This is readily seen by considering the projects in which he was engaged immediately after the completion of *Principia*. For example, in *Our Knowledge of the External World* the method is applied to the problem of the external world, with a view to showing how "the derivative parts of our common knowledge arise" (1914b: 54); that is, how that which tends to become more or less doubtful under the process of critical reflection ("soft data") can be exhibited as a function of such data as resists this process; this "hard data" consists of the facts of sense together with some facts of memory and introspection plus the general logical truths (*ibid*. 56–8).

The inspiration behind genuinely scientific philosophy is purely *factual*. Such philosophy, Russell explains, is piecemeal and tentative; which means that even when they turn out not to be wholly true, the scientific philosopher's hypotheses still remain capable of revision and can be used as a basis for future work. Evidently, then, Russell's agenda for scientific philosophy is at least partly motivated by the idea, familiar from the history of philosophy, that in philosophy, too, correct method will ensure genuine progress:

> The problems and the method of philosophy have, I believe, been misconceived by all schools, many of its problems being insoluble with our means of knowledge, while other more neglected but not less important problems can, by a more patient and more

> adequate method, be solved with all the precision and certainty to which the most advanced sciences have attained. (Russell 1914b: 1)

But, Russell continues, method is not the only area where philosophers have sought inspiration from science. A different way of using science is in evidence in much of traditional philosophy. Here one draws *on some actual results of current science*, which are used as a basis for a characteristically philosophical unification and generalisation. For example, many past metaphysicians were guided by the essentially pre-Copernican idea of *the* universe as a single system concerning which they thought they could draw conclusions with strong ethical and religious overtones.

The building of such thoroughly anthropocentric metaphysical systems, apparently warranted by the pre-Copernican geocentric astronomy and motivated by "the hope that the course of nature might be guided by some sympathy with our wishes" (Russell 1914a: 98), discards what is the most valuable feature of the scientific method. A metaphysical system is "constructed in one block", with the consequence that if the underlying scientific generalisation, which the metaphysician has given an absolute and rigid form, turns out to be incorrect, the system must then be given up as wholly incorrect, as it retains none of the flexibility that is characteristic of a genuinely scientific use of hypotheses.

Having thus discarded much of traditional metaphysics as a non-factual enterprise, Russell adds the familiar proviso that philosophy, when it is "inspired by ethical notions", can be of the highest significance but that the value of such philosophising does not belong to the sphere of reason and argument:

> What is valuable is the indication of some new way of feeling towards life and the world, some way of feeling by which our own existence can acquire more of the

> characteristics which we must deeply desire. The value of such work, however immeasurable it is, belongs with practice and not with theory. (*ibid*. 107)

3. Let us now return to Eino Kaila. I have already described Kaila's philosophy as "scientific in the most serious and non-superficial sense of that term". Could a comparison to Russell's scientific method help us put Kaila's conception of philosophy in a larger context?

It is clear enough that Kaila did not use scientific ideas in the speculative, metaphysical way criticized by Russell. Some of Kaila's ideas in his *Naturphilosophie* may deserve to be called "speculative", but he was too much concerned with reality, and with attaining real knowledge, that he could have given in to the sort of speculation that claims inspiration from science but in fact yields nothing but philosophy of the most vulgar kind; the young Kaila's withering remarks on the philistine physiognomy underlying the then acute and popular monism of Wilhelm Ostwald and Ernst Haeckel come readily to mind here.[4] What the philistine borrows from science are its "latest results", arranged in an easily digestible form and put to use as the absolute building blocks for a "scientific world-view" – a description that comes quite close to what Russell would say about the misguided sort of scientific philosophy in "Scientific Method". Kaila, himself an experimental psychologist as well as a philosopher, was too much involved in real science for there to be room in his physiognomy for the philistine attitude; and, of course, his philosophical temperament made such an attitude an impossibility for him.[5]

[4] See Kaila (1911).

[5] Admittedly, Ostwald and Haeckel themselves were scientists – and Ostwald in particular of the highest order. Perhaps, then, the difference between the popular monists and

The other sense of scientific philosophy identified by Russell is more promising or our purposes; after all, there is a topical as well as historical connection between Russell's method of logical constructions and Kaila's concern with what may be called "The Problem of Constitution".[6]

In Russell's case the motive behind his scientific method and its key maxim – "wherever possible, logical constructions are to be substituted for inferred entities" (1914c: 149) – is easy to miss. This is mainly because his epistemology is commonly associated with Cartesian scepticism and is thus seen as an attempt to identify the absolutely unshakeable foundation for empirical knowledge. The fact is, however, that Russell saw little reason to be worried about scepticism in the traditional sense. His real problem is, indeed, one of constitution (or *construction* or *reconstruction*), to wit, the exhibition of our ordinary and scientific knowledge – in particular, our knowledge of the world of physics – in terms of what is given to us in immediate experience. And the recourse to immediate experience is there not because immediate experience provides a safeguard against doubt but because it is "undeniably involved" in our knowledge of physics, just as it is undeniably involved in our knowledge of almost anything else (cf. Russell 1914b: 84–6).

Admittedly, Kaila's earliest allusions to the general problem of constitution refer to Kant, rather than Russell. In the 1923 paper "Kantia lukiessa" ("Reading Kant") Kaila argues that one of the ideas in Kant's first *Critique* possessing permanent value is the idea of *construction*. 'Objects' and 'natural events', he explains, are never strictly speaking given to

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Kaila was just one of philosophical temperament – one shallow, the other deep, one might want to say.

[6] I borrow this use of the term "Problem of Constitution" from von Wright (1979, p. xxx). It has, of course, application beyond Kaila (and Russell).

us, which is why we must construct them (1923, p. 398). The question arises: what are the principles underlying this construction, those "axioms of experience" on the basis of which "subjective states" are regarded as reflecting an "objective" natural order? This is the gist of Kant's problem, and it is the question that creates epistemology in the modern sense of that term, according to Kaila.

This mention of modern epistemology as well his subsequent discussion shows that Kaila's real reference point is not so much Kant as the streamlined version of Kantianism according to which these axioms possess only relative, and not absolute, validity; Kaila mentions Reichenbach's work on the theory of relativity as an example (*ibid*. 406–7).

Kaila retains this view in *Wahrscheinlichkeitslogik*, where he argues that certain "transcendental hypotheses" – concerning the existence of an external world, of reliability of memory, of lawfulness, etc. – are contained in the concept of experience in the wider sense, namely in the sense that these hypotheses are genuine probability-statements possessing a factual ground and not just practical postulates, let alone Kantian "synthetic a priori judgments" (Kaila 1926a: III.1).

The terminology of "transcendental hypotheses" disappears by the time Kaila comes to publish *Beiträge zu einer synthetischen Philosophie* in 1928, but the substance of the earlier view is still preserved: "The totality of our knowledge of the external world (*Aussenwelterkenntnis*) is a logical function of experiences" (1928: 49). This, Kaila holds, is an "exact expression of the logical fact that all grounds for regarding a given system of cognitions as true or probable are contained in actual experiences (*in den tatsächlich gemachten Erfahrungen enthalten sind*)" (*ibid*.)

In spite of this formulation, Kaila retains a critical distance from Russell's programme of logical constructions. The controversy is between realism (this being Kaila's view) and phenomenalism (as in Russell's programme). Kaila (1928: 48–53) argues that Russell

presents his phenomenalism as an inevitable consequence of two premises. The first is the "logical state of affairs" that all propositions about the external world are logical functions of (propositions about) perceptions; the second is Russell's supreme maxim, which in Kaila's formulation says that the introduction of new, non-given entities is always to be avoided, if these can be replaced by "logical constructions", obtained through definitions from entities which are *given* (*ibid*. 50)

Interpreting the second principle as a version of Occam's razor (as does Russell himself), Kaila points out that Russell's two premises are unassailable, but he then argues, *pace* Russell, that phenomenalism does not in fact follow from them.[7] "Logical functions", Kaila explains, fall into two distinct kinds: truth-functions and probability-functions, and "extra-phenomenal elements" cannot be truth-functions of perceptual propositions. They are not given and hence they are something *new* in relation to what *is* given; which is why they cannot be secured by deductive-logical means (cannot be defined on the basis of phenomenal elements). The extra-phenomenal can therefore only be a probability-function of the given (*ibid*. 51–2).

Kaila's argument hardly meets Russell on a neutral ground. Rather, it is one of those occasions where Kaila's *realism* asserts itself. This realism is clearly in evidence, for example, in Kaila's early formulations, in the mid-1920s, of the "Principle of Possible Experience" (*Prinzip der Erfahrbarkeit*); as Kaila understands it, the Principle states that every factual proposition – every proposition which is about reality – must imply something that can be given in experience (Kaila 1926a: 152).[8] For Kaila, at that time, this something is

[7] For Russell's own reasoning about this matter – which cannot be discussed here – see the beginning of Russell (1914c).

[8] Cf. Kaila (1926b: 52).

just the probability-ground of the statement whose factual content is in question. Accordingly, he criticizes "positivists" for overstating the Principle, as they see in it the maxim that every factual proposition must have as its *object* something that can in principle be given in experience (*ibid*. 159–60); that is, that every factual proposition is *about* something that can be so given. For Kaila, Russell's phenomenalism is just a special case of "positivism" in this sense.

Kaila met a more refined and less compromised version of Russell's programme in Carnap' *Logische Aufbau der Welt*. Russell had in fact made use of "inferred entities" in his logical constructions – sensibilia together with the sense-data of other people for which there is such evidence as is based, ultimately on the analogical argument in favour of other minds (cf. Russell 1914c: 151) – whereas Carnap's actual starting-point in his constitution theory is strictly phenomenalist. Starting from what is "given", Carnap seeks a rational reconstruction of empirical science, as regards its epistemic structure; this is Kaila's formulation of the programme of *Aufbau* (Kaila 1930: 12). Here the given is understood solipsistically: it consists, in fact, in the past stream of the experience of an imaginary solitary thinker (*ibid*.)

Carnap, Kaila observes, makes no explicit appeal to "Occam's Razor" in the way Russell did. But the constitution theory assumes what Kaila calls the Principle of Analytic Equivalence. The proper form of definition is a sentence stating that two propositional functions are equivalent, and the Principle says that when the equivalence constitutes a definition, it implies identity of *meaning* (cf. Kaila 1930: §2 and p. 17).[9] Now, every new

[9] In his discussion-note on Kaila (1930), Carnap formulates the Principle explicitly in terms of analyticity, but this notion, too depends in the familiar manner upon that of definition. The Principle, he explains, "says that two concepts are identical in meaning (*gleichbedeutend*), if they are analytically equivalent, i.e., if there is an analytical sentence

concept must be defined, and the only thing that can ever be used in a *defniniens* is a concept that is given. It follows from the Principle, as Carnap himself puts it, that "nowhere in the constitution system can something fundamentally new be introduced" (Carnap 1932: 75–6). Or as Kaila observes, echoing his criticism of Russell's phenomenalism:

> The domain of what is given, the ken of 'my' past experiences – i.e., the basic elements of the fictitious thinker A performing the construction – can never be left behind, can never be transcended. Indeed, 'construction' is nothing else but deduction. And no deduction in the world can bring to light anything other than what is already implicitly contained in what is given. Just as little as pure mathematics, if the natural numbers constitute its basis, can contain anything other than statements about classes, classes of classes, classes of relations … of natural numbers, just so little can empirical science contain anything other than statements about classes, classes of classes … of 'my' past elementary experiences. (1930: 15–6)

Kaila continues to find this unacceptable. He observes, to begin with, that the results obtained by "logistic neopositivism" are downright catastrophic for classical philosophical problems, in particular for questions about reality (*ibid*. 15). From the point of view of *Aufbau*, there simply is no way of stating the content of the metaphysical controversy concerning the existence or non-existence of a reality transcending consciousness. As Kaila puts it,

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expressing their extensional equivalence. And a sentence is analytic (or tautological), if its proof does not make use of non-logical axioms, but acknowledges only the relevant definitions" (Carnap 1933: 75). Carnap elaborates this in a letter to Kaila; see Manninen (2007: 259–60).

> [T]here is not a single question concerning empirical, constructible reality which would be touched in any way by this controversy. The geography, e.g., of an epistemological realist contains exactly the same scientific statements as that of an epistemological idealist. According to either view, the 'given' is the same. The difference between the two views which say the same with respect to what is given, however, has to be imaginary, since in its final logical meaning any statement about the world is a statement about what is given. (1930: 16)

For example,

> the controversy between the phenomenologists and the atomists in physics rests solely on a misunderstanding. For if there are but sufficient empirical grounds for the existence of atoms and the like, then the atoms are to be taken as 'real' in precisely the same sense as, e.g., 'this table here', which is no more 'given' than the atoms. Both are sophisticated logical constructions of the same kind ('physical things') obtained from what is given. (*ibid*.)

It is clear that Kaila's reasons for being dissatisfied with Carnap's position have nothing to do with "metaphysics".[10] What Kaila is concerned with are the implications of *Aufbau* for the status of *science*. He argues at some length that, in contrast to Carnapian "ideal manifolds" (*ibid*. 49), neither experienced time not perceptual space are quasi-analytically constructible:

[10] Kaila (1930: 48–9) emphasizes that "the necessity of a rather radical anti-empiricist psychology of knowledge" does not imply a commitment to *a priori* metaphysics.

the former because quasi-analysis loses sight of the flow and direction of time; the latter because it cannot reproduce the infinity of perceptual space.[11]

Now, Kaila contends, it is of course conceivable that beyond given sensory boundaries both space and time are empty or that both space and time are "filled with entirely chaotic content" beyond such boundaries (*ibid*. 48) But assuming that our life is neither an illusion nor a dream, we can pose the question: "if our perceptions are sample-like segments of an *n*-dimensional manifold, what inferences can then be made from their given content to their not-given content?" This, Kaila argues against Carnap, "is precisely the question which empirical science is to answer" (*ibid*.)

Apart from all specific details, then, the gist of Kaila's criticism of *Aufbau* is that it substitutes an ideal construction for real-life science. This brings us back to the question from which we started: what is the import of "scientific philosophy" for Kaila?

According to Kaila, *Aufbau* "is an attempt at a philosophical deepening and justification of certain fundamental principles of modern exact thought" (1930: 45). There is no question for anyone with any understanding of the nature of exact thought that such tools as formal logic, or the concept of implicit definition or of isomorphism are of the highest importance

[11] Kaila's criticisms of *Aufbau* were discussed by Reichenbach and his colleagues in Berlin as well as Carnap and some other members of the Vienna Circle in Vienna (Stadler 1997: 176–8; Manninen 2007: 280–1). A précis of Carnap's replies – which he reported in detail in a letter to Kaila – can be found in his discussion-note on Kaila's monograph (Carnap 1933: 76–7). Carnap – whom Kaila described to Reichenbach as a "formidable dialectician" – was largely unperturbed by the specific criticisms. And whichever conclusions one would eventually reach about the details, he argued, this would make no difference to the application of the "logistic method" itself (*ibid*. 77).

for any philosophy that claims to be scientific. Carnap's *Aufbau*, however, is more than just an analysis or systematization of the formal principles and methods, as they are used "in their native domains" (*ibid*. 46). As they are used in *Aufbau*, however,

> [t]hese principles become absolutized: everything which cannot be formalized without residue, which does not submit to the requirement of purely structural statements, which offers resistance to the extensionality thesis and the principle of analytic equivalence or the requirement of decidability, all this is to be eliminated from science […]. (*ibid*.)

What renders a philosophy scientific is not a specific method or collection of methods, even if they have their origin in "modern exact though". Indeed, on the contrary, such a conception carries with it a definite risk, exactly analogous to the one that Russell identified when he described the philosophical misuse of scientific ideas: only now the idea is formal (methodological), rather than contentual. Kaila's idea of what makes philosophy scientific, I want to argue, is much more robust than what Russell had in mind in 1914 or Carnap in 1928. What does this robustness consist in?

Let me make a bold suggestion. Kaila's philosophy is, as we might put it, "robustly scientific" ultimately because his conception of philosophy and of its method is *naturalistic*. Like most catchwords, "naturalism" is of little use, if left unexplained. I will spend the rest of the essay to put some flesh on the bones of this proposal.

4. Naturalism, as it is understood here, involves no less than four philosophical theses. Firstly, the most fundamental ingredient in naturalism is the assumption that there is but one way to knowledge, namely science, possibly broadly construed so as to include everyday or

pre-scientific knowledge and philosophy. Secondly, given this, it follows that there is no separate philosophical method. In particular, there is no "first philosophy". And this means two things: on the one hand, there is no metaphysics and no metaphysical method distinct from the empirical method of science and providing a higher and superior road to knowledge or "wisdom"; on the other hand, there is no justificatory processes outside science and applicable to it, processes to which science would be accountable. Thirdly, the ethos of philosophy is thus *factual* rather than non-factual. To put the point in plain English, philosophers are concerned with reality as much as scientists – and more specifically, there is but one reality for scientists and philosophers to be jointly interested in. Fourthly – and this is to sum up the previous points – philosophy has no special province. It remains alive as a fruitful enterprise only as long as it seeks to contribute to what is ultimately one pursuit of human knowledge. This organic connection between special sciences and philosophy does not mean that there is no difference between the two. Philosophy is more *general*, as it is concerned with fundamental concepts and propositions; but it would be pointless to try to draw a strict line here between what belongs to philosophy and what belongs to science. And philosophy is also distinguished through the fact that it is *systematic* in its own special way; philosophers should not lose sight of the task of elaborating a world-view or a conception of the world.

5. A characterization of Kaila's philosophy as naturalism in the above sense gives rise to three quite general worries. The first two of them relate to Kaila's adoption of *logical empiricism*, while the third one has to do with his life-long commitment to *monism*.

In the first place, naturalism fits rather poorly with the meta-philosophical commitments of logical empiricism; and logical empiricism, of course, played a major role in Kaila's struggle with the Problem of Constitution, as in Kaila's two contributions to logical

empiricism, Kaila (1936; 1941). Keeping in mind what was said about Kaila and Carnap's *Aufbau,* should we conclude that Kaila's conception of the philosophical method undergoes a rather radical change sometimes after *Der logistische Neupositivismus*? In Kaila's 1942-paper, "Reaalitiedon logiikkaa" ("On the logic of factual knowledge") we find the following passage:

> The systems of metaphysical philosophy fall into ruin very quickly, and a new building is erected from foundation. This does not happen in science. As a rule, its results continue to retain a relative justification; earlier results, once they are considered in the light of later developments, usually turn out to be approximations ("erste Annäherungen"), which are not "completely wrong" but require some adjustment. This applies to the results of logistic empiricism, for here it is a matter of factual research and not of "philosophizing". (1942: 47)

"The results of logistic empiricism" refer to the Constitution Theory. It may appear then that Kaila has by now adopted a conception of the philosophical method that is essentially "Russellian" in the sense described above. Such a conclusion would be unwarranted, however. I provide two brief considerations.

Firstly, Kaila's adoption of logical empiricism[12] – including, crucially, the thesis of translatability – was a reaction to a specific point in the Problem of Constitution, not a result of meta-philosophical reflection. Very briefly, the point is this. As before, Kaila continued to argue that the very core of scientific thinking is in its connection to experience. This is "the fundamental principle of science" (Kaila 1942: 31), formulated now as *the thesis of*

[12] Or "logistic empiricism", as he prefers to call it (Kaila 1942: 27).

testability: every real sentence must have definite experiential consequences. The thesis is accepted by common consent and by no means implies a commitment to logical empiricism (*ibid*.) The latter view arises only from the recognition that such testability is possible only on the assumption that "factual concepts" are "reducible to experience" (*ibid*. 31–2). According to Kaila, then, the fundamental insight of logical empiricism is to be found in the apprehension that there is a principled connection between the fundamental principle and the formation of factual concepts in science (*ibid*. 32).

Secondly – and this point is closely connected with the first one – a strong case can be made that for Kaila there was no internal relationship between the general problem of constitution and logical empiricism.[13] Even when he addresses the problem within the context of logical empiricism – where it takes the more specific form of "constitution theory" – the key concept which defines the problem for Kaila is the perfectly general one of *invariance* as the criterion for reality. The concept is general-cum-defining, because "the search for higher invariances" and an account of experience in terms of maximal invariance are of "fundamental significance in the whole enterprise of acquiring knowledge" (Kaila 1936: 152). Hence, Kaila's adoption, during one period of his philosophical career, of the method of logical empiricism in no way compromises his naturalism.

6. There is another big worry relating to logical empiricism about the Kaila–naturalism connection. This is the so-called linguistic theory of the *a priori* and of necessity, which

[13] The point is really quite obvious in light of what Kaila's views in the posthumous paper on the "perceptual and conceptual components of everyday experience" (Kaila 1960). What needs documenting is primarily how Kaila's views on "translatability" developed over the years. Evidently this task falls outside the scope of the present paper.

Kaila (1939) includes among the main theses of logical empiricism. According to the theory, the concept of analyticity, conceived in terms of definitions and linguistic rules and hence as something essentially conventional, provides the key to understanding the concept of truth in *formal sciences* – logic and mathematics – as opposed to factual sciences. As Kaila explains:

> Everything that is analytic is of the character of a definition in the sense explained above, that is, is of the character of a convention. We set up certain conventions and adhere to them strictly; this is the answer to the question of how there can be sentences which are "necessary truths" holding in "all possible worlds".[14]

Kaila here speaks only of necessity, but the explanation is meant to apply to apriority as well. The latter concept is indeed in the focus, and the corresponding claim about necessity is just a corollary to it; for it is the linguistic account of apriority that is an essential ingredient in the empiricist account of a sentence's *factual content*. In Kaila's formulation, "the first main thesis of logical empiricism" says that the statements "sentence *S* is analytic" and "sentence *S* is *a priori*" are equivalent (1939: 173). Now, every sentence which is about reality must possess a certain factual content, that is, it must have definitive experiential consequences; this is "the second main thesis of logical empiricism". Putting the theses together, we get an explanation of why formal truths are devoid of factual content: such truths are analytic or true in virtue of linguistic conventions and hence they are true no matter what our experience is like. Elsewhere Kaila explains that the empiricism of logical empiricism applies only to factual sentences and factual concepts, but here the requirement of empiricism is absolutely strict; equally strict, however, is the "rationalism" or "logicism" that is inherent in logical

[14] Kaila (1939: 173); translation by AK.

empiricism (1942: 26–7). That is, the logical empiricist explanations of analyticity and of factual content work only if the distinction between what is formal (a priori, necessary) and what is factual is absolutely sharp.

The linguistic account of apriority introduces a gap between factual and formal truth, between the realm of empirical science, where truth is accountable to experience and the realm of mathematics and logic, where truth is decided by convention. But what, then, comes of naturalism, which is supposed to recognize but one fabric of knowledge?

This is the worry and it is very much to the point. I insert three comments on it. Firstly, the linguistic account of apriority puts a great deal of weight on conventions. Now, it could be argued that conventions are in fact not so deeply inimical to naturalism. After all, conventions in the sense relevant here appear to be facts about language-usage and as such they are amenable to a scientific study just like any other empirical facts.

To reason this way, however, is arguably to misconstrue the role of conventions in the logical empiricist epistemology. Kaila, for one, is not very clear about what this role is supposed to be, but the above quotation from *Inhimillinen tieto* and other similar explanations[15] indicate acceptance of what, perhaps, qualifies as the standard version of the linguistic account of apriority. On this view, *a priori* knowledge is grounded in knowledge of stipulations regarding the meanings of certain words plus knowledge of a range of truths that follow from these stipulations.

One problem with this standard picture is that facts about usage are arguably thoroughly empirical – which, of course, is the reason why they might at first sight be

[15] "Logic does not prescribe anything. In it we set up conventions regarding certain things – certain operations in particular – and observe what will come about when these conventions are followed" (Kaila 1942, p. 29; translation by AK).

acceptable to a naturalist as well. But then it is quite impossible to see how such facts could act, as Arthur Pap (1955: 114) puts it, as *reasons* for truths which are *a priori* and hence necessary.

If this is admitted, the grounding-relation must be construed in some other way. Plausibly, a logical empiricist is committed to regarding conventions as *constitutive rules*. We need not explore here how this idea is to be cashed out; whichever way the question is resolved, the conclusion must be that the linguistic account of apriority *is* indicative of an anti-naturalist epistemology.

Secondly, one might argue that naturalism is incompatible with apriority only when the latter concept is given a quite specific content, content which is taken more or less as a matter of course in much of traditional epistemology but which it would be a mistake to see as an ineliminable element of apriority. Traditionally, apriority is taken to imply such strong properties as certainty and unrevisability (cf. Goldman 1999). Clearly, the linguistic account of apriority complies with tradition in this respect. To spell out an alternative account of apriority is a task for naturalized epistemology. How Kaila would have reacted to such an enterprise is a matter for speculation.

On the other hand, and this is the third point, one could speculate that the traditional notion of apriority does not in fact resonate very well with some of Kaila's deeper convictions about knowledge. It is correct to say, I think, that Kaila's conception of human beings and their cognitive life was thoroughly *biological*. Such a view, if followed out consistently, decrees that no segment of factual discourse is irreducibly *a priori*, at least if apriority is construed in the traditional way. Whether Kaila had any settled opinions on this issue – or unsettled, for that matter – is, again, something I do not know.

7. The third general worry about Kaila and naturalism concerns *reduction*. A naturalist philosopher believes that science is the ultimate arbiter in question of existence. A typical naturalist, however, argues that this role in fact belongs to the one fundamental science of physics (hence the term "physicalism"); and hence that anything that is not physics has ontological consequences only if it can be shown to be acceptable from the physicalist point of view. Hence, naturalism is typically seen as implying a commitment to a strong form of *reductionism*.

This aspect of naturalism introduces a topic that is of considerable importance in Kaila's philosophy – even apart from the question of his alleged naturalism. It is well-known that Kaila's vision of reality was *monistic*, a feature that was certainly very deep in his philosophical personality:

> I do not believe, and have never believed ever since my philosophical awakening, that there should be any unbridgeable gap between the so-called material and the so-called mental, or between the inanimate and the animate, or the body and the mind. All such differences are in fact just relative differences of degree and not absolute, qualitative ones. The world which we experience, the world we see, hear and feel; in this world the material and the mental, the inanimate and the animate, the body and the mind are intertwined in such a way that no absolute distinction between these characteristics can, in my opinion, be drawn. They are held together by hidden connections, connections that weave them together into one "all-unity". If, for example, we understand "material" and "mental" in such a way that the one excludes the other absolutely, then,

> according to the unitarian view, neither of these two exists but there is something third; what this "third thing" is like is something that we learn from experience.[16]

On the other hand, and this is also shown by the end of the quotation, Kaila's monism is of a non-reductive kind. When he sought to overcome such dualisms as those between the mind and the matter, between the phenomenal and the physical, between quality and structure, his task was never that of reduction but of *unification.* According to Kaila, moreover, this unification is a matter of scientific theories; the core of the monistic or "unitarian" philosophy is the belief that the striving towards unification that is present in science and the formation of scientific theories can, indeed, be carried out in full. Insofar as there are obstacles standing in the way of this goal, these are just empirical difficulties which can be overcome by strenuous effort (1953: 514). This may be non-standard, as far as naturalism goes; on the other hand, one may well argue that the spirit behind Kaila's "unitarian" monism is more genuinely scientific and naturalist than what is found in most naturalist philosophers of today. I cannot elaborate this point here, though.

8. I have mentioned some potential points of conflict between Kaila's logical empiricism and his naturalism. It is all the more remarkable, then, that naturalism in fact shows itself even in *Inhimillinen tieto,* which is, after all, intended to provide a systematic exposition of logical empiricism. Consider what Kaila does in the first four chapters of the book, which constitutes its historical part. There he describes the role that the search for invariances has played in the

[16] Kaila (1953: 506); translation by AK.

history of science, as it created, first, Greek science and then, over two millennia later, the Galilean conception of knowledge, which underlies modern science.[17]

It is quite remarkable that when Kaila speaks about knowledge in *Inhimillinen tieto,* what he has in mind is not the *concept* of knowledge in anything like the sense that has been prevalent in contemporary analytic philosophy, but the fabric of *actual human knowledge*. Nowhere is he trying to analyze the concept of knowledge, as an "analytic" philosopher might, or the justification conditions of knowledge, or any such thing. His focus is exclusively on human knowledge as an *actual* and *perfectly natural* entity. The concept of invariance is not something that Kaila arrives at through an analysis of the concept of knowledge. Rather, he argues that human cognition is in fact everywhere guided by the search for invariances, which has a biological basis deep in our nature. It is what has created

[17] As Kaila sees it, logical empiricism is not a response to a specific set of problems in empiricist epistemology (at least not if these are described in the standard, "philosophical" way). His view of the pre-history of "logical empiricism" is much more exciting. In his view, logical empiricism is the eventual outcome of a gradual process whereby scientists and philosophers have more and more clearly grasped a number of key elements inherent in the Galilean conception of knowledge. These include at least the following: (i) *the search for invariances*, leading to a strongly "rationalized" or idealized mathematical theory, in which the multiplicity of experience is present only in a radically simplified form; (ii) *the requirement of verification*, subject to the condition mentioned in (i) but, equally, itself imposing an essential condition on "rationalization"; (iii) the notion that *there is a clear distinction between formal and material truth*, which leads to the view that natural science offers nothing but "a probable opinion" but also to the insight that there is in fact no other knowledge than this probable opinion.

science, but it applies more widely, to pre-scientific everyday thinking as well as, say, to aesthetic experience and artistic style (Kaila 1939: 16). What is specifically philosophical here is the insight that, on a conceptual level, the search for thing-like invariances (things with their immutable essences) created Greek science, which was then eventually replaced by Galilean science, where the invariant is not to be found in things but in the unchanging relations obtaining between changing things. The story Kaila tells us here is a perfect example of how there is room for genuinely philosophical insight, even if one's approach is broadly "naturalistic".

9. What, then, of philosophy itself? In *Inhimillinen tieto* Kaila remarks in passing that there is "no knowledge of reality except so-called ordinary scientific knowledge, including our pre-scientific everyday knowledge, and all of this is founded upon experience" (1939: 184). Given this, the question arises: What is the status of philosophy in the fabric of human knowledge?

One occasion where Kaila addresses this question at some length is in his 1929-book, *Nykyinen maailmankäsitys* ("The contemporary view of the world"). Kaila's book consists in four lengthy chapters, entitled "Space and Time", "Matter", "Life" and "Soul", respectively, and these are full of discussions relating to recent findings in physics and chemistry, in experimental biology and psychology as well as philosophical work analyzing these results; Kaila mentions Reichenbach, Russell, Carnap as well as the Gestalt-theorists Köhler, Wertheimer and Goldstein. In Chapter I, Section 9, entitled "The Relationship of Philosophy to Science", Kaila anticipates a question that, he surmises, may have occurred to a reader who is familiar with "philosophy"; all this stuff – physics, chemistry, experimental biology, etc. – may be important, but is it "philosophy"? To address this question, Kaila considers at some

length what relationship scientific – that is, "rigorously serious and strictly factual" – philosophy bears to special sciences (1929: 95).

The brief answer is that philosophy is the *beginning of science*. This is meant not only in the familiar historical sense but also in systematic sense that every special science has its fundamental presuppositions and most general concepts, the study of which *is* philosophy, no matter whether this study is done by scientists themselves or by people with a publicly recognized status as philosophers, that is, academic philosophers. And philosophy is also the *end of science,* because the most general results of special sciences, the results that are significant for the "general view of the world", belong, again, to philosophy; for throughout its history philosophy has been aiming at this kind of general view of the world:

> Disowning its own children, the special sciences, philosophy will be withering, losing sight of reality, eventually getting lost in hallucinations. It can lead the stern and vigorous life of science only as long as its children feed it with strong nourishment. If special sciences disown their mother, philosophy, they will lose their deeper significance, sinking to the level of stamp collecting or some other such innocent – and petty – pastime. (*ibid*.)

Given this mutual influence, *there is no sharp line between philosophy and special sciences*. Sometimes it is said that philosophy is distinguished from science proper by the fact that whereas the latter is characterized by relatively steady progress, philosophy is nothing but the "cemetery of philosophical systems". Such a view, Kaila argues, would be superficial, being based on a certain *historical myopia*.

For example, questions relating to the nature of space and time, the "relativity" of spatial and temporal determinations, occupied an important role in Leibniz's and Kant's

thinking. These very same questions are now addressed in the most general parts of modern physics. But if these questions were philosophy when they were reflected upon using unsophisticated tools, less than fully articulated concepts, and in a most tenuous relation to experience, all the more are they philosophy *now* that they are being investigated with precise concepts and in close relationship to experience. The inevitable intrusion of mathematics makes no difference here, says Kaila. It only means that a modern philosopher must be sufficiently acquainted with the relevant conceptual and mathematical tools; lacking these, he is no philosopher in the sense in which Leibniz or Kant were philosophers and, consequently, has no right to speak.

If this conception of philosophy strikes one as strange, Kaila notes, that is only because after Kant professional philosophy ceased to be the universal science which it had been for the likes of Leibniz and Kant, becoming replaced by a kind of "humanistic study". This is perhaps the most fateful event in the history of professional philosophy, as it undermines the connection with natural science and mathematics. Writing in 1929, Kaila expresses the hope that this "deplorable state of things is coming to its end" (1929, p. 99).

Kaila's naturalism, then, is nothing new. As he himself acknowledges, it can be found in many past masters like Leibniz and Kant.[18] To be a naturalist in the sense that is relevant here, one only needs to retain the connection between philosophy and *reality* – allow me to put the point somewhat bluntly – a connection that has not been a matter of course for much of twentieth century philosophy. For Kaila this attitude *was* just such a matter of course.

[18] Of course, this does not mean that Leibniz and Kant would have been out-and-out naturalists. Here naturalism concerns just the relationship between "theoretical philosophy" and science.

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